

Center for Independent Experts (CIE) Peer Review of the
Compass Lexecon Report on Recommendations for Excessive
Share Limits in the Northeast Multiplespecies Fishery

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July 22, 2014

Executive Summary

The Northeast Fisheries Management Council (NEFMC) contracted the economic consulting firm Compass Lexecon (CL) to conduct an analysis to (1) determine if excessive shares and market power currently exist in the Northeast multiple-species fishery and (2) recommend an ownership cap limit to prevent exercise of market power in the future. The report finds that the evidence that was collected and analyzed by CL does not support the conclusion that market power is currently being exercised in the Northeast multispecies (NEMS) fishery. The CL report recommends setting an excessive share cap on the potential sector contribution (PSC) conferred to permit owners at 15.5% of available PSC.

This conclusion and recommendation is based on the application of a seven-step procedure (see below). The CL findings rely on informal interviews conducted by CL in 2013, as well as calculation of the Herfindahl-Hirschman Index (HHI) at the individual fishermen and sector level and across individual ground fish species. Methods used by CL to determine current and potential for market power in the Northeast multiplespecies fishery do not meet standards for conducting research in the field of economics. The CL recommendation of a 15.5% ownership cap at the individual level is not supported by reliable empirical evidence. The recommended appears to derive primarily from a misinterpretation of Department of Justice guidelines for using HHI indices to assess non-competitive mergers.

Additional deficiencies in the CL methodology center around: (1) over reliance on informal and unverifiable qualitative information; (2) miss-interpretation and over-reliance of threshold HHI values; (3) lack of evidence supporting the recommendation that the appropriate unit of regulation is an individual fisherman (the ability of sectors to exercise market power was dismissed based on anecdotal testimony of interviewees); (4) unsubstantiated conclusions regarding economics of scale, size and scope; (5) absent theoretical argument or empirical evidence to support conclusions; and (6) miss-characterization of factors that determine permit prices and potential for market power in multiple-species, quota managed fisheries. The methods employed and additional deficiencies raise serious doubt about the validity of the CL finding and recommendation.

CL findings and recommendation should be viewed cautiously. Harvest permit caps that are set unnecessarily low can prevent the realization of economics of scale, size and scope, and place unnecessary administrative burden on fishery managers. HHI values should be used (as by the U.S. Department of Justice) as a warning system for the potential existence of market power inefficiencies. If HHI's reach values that signal markets for PSC or annual catch entitlement (ACE) are concentrated, established econometric methods should be employed to empirically test for, and measure market power inefficiencies. Steps could then be taken to break apart accumulated concentration and restore competitive conditions in the Northeast multiplespecies fishery.

The potential for a sector to exercise market power should not be dismissed based on unstructured qualitative feedback from industry. Similarly, permit banks that may control

large amounts PSC should be examined as potential conduits of market power inefficiencies.

1 Background

The NEFMC contracted CL to provide independent advice regarding the establishment of caps on holdings of access privileges to the NEMS fishery to prevent the accumulation of excessive shares of harvest permits. CL defined an “excessive share” to be an access rights share that would allow a permit owner to influence to its advantage prices in the fisheries output or harvest permit market. Setting an ownership cap that is too low can interfere with fishing firms' ability to organize their businesses in a way that minimizes operating costs. Setting a cap too high may result in market power which will itself lead to economic inefficiency and a socially undesirable distribution of economic rents. It is therefore important to determine if market power currently exists in the NEMS fishery, whether an ownership cap policy can prevent market power, and if so, the form that an ownership cap policy should take.

The CL report finds: (1) that the evidence that was collected and analyzed does not support the conclusion that market power is currently being exercised in the NEMS fishery; and (2) recommends setting an excessive share cap on the PSC conferred to permit owners at 15.5% of available PSC.

Role of reviewer: I was contacted by the Center for Independent Experts and asked to participate in a peer review of the CL report (titled “Recommendations for Excessive Share Limits in the Northeast Multispecies Fishery”). I received the report and other background materials from Chad Demarest on June 3, 2014. I reviewed these materials and attended the meeting of CIE reviewers, which was held in Salem, MA on June 12 and 13, 2014.

Reviewer qualifications: My academic research has studied aspects of transferable quota management programs in marine fisheries with a focus on their implications for market structure and performance, and economies of scale, size and scope. I have considerable experience conducting empirical research on market structure in quota-managed fisheries, including multiple-species fisheries. I have written and published research papers that characterize multiple-species production decisions of fishermen (targeting behavior and bycatch avoidance). I have studied bio-economic outcomes under tradable harvest permits or quota regulations, landings taxes and revenue quotas. My recent work examines fishing behavior and market performance in fisheries under uncertainty and trading frictions, costly avoidance of bycatch species, and transactions costs in permit trading markets. In the fall of 2013, a colleague, graduate student and I began a project to identify conditions that facilitate the exercise of market power in multiple-species fisheries managed with tradable fishing permits. The intent is to extend to the multiple-product or species setting, research by Hahn (1984), Anderson (1991, 2008) and others (e.g., Maleug and Yates, 2009), which seeks to identify conditions conducive to the exercise of market power in single-output industries. This work is in progress.

2 Summary of findings

2.1 Description of methods used by Compass Lexicon

The CL report finds: (1) that the evidence that was collected and analyzed does not support the conclusion that market power is currently being exercised in the NE groundfish fishery; and (2) recommends setting an excessive share cap on the PSC conferred to permit owners at 15.5% of available PSC. It will be convenient hereafter to refer to the item (1) as the *conclusion* and item (2) as the *recommendation*.

The above conclusion and recommendation are based on the application of a seven step procedure: (1) assess quota ownership information; (2) assess competitive information; (3) check threshold condition; (4) establish concentration targets; (5) determine share limit-market concentration relationship; (6) identify regulatory and practical constraints; and (7) recommend excessive share cap.

Two types of data were analyzed by CL in application of the seven-step process. Qualitative data was collected during a series of unstructured and voluntary inter-views with fishery stakeholders, including industry members and representatives, government representatives and nongovernmental organizations. Second, CL researchers analyzed PSC ownership data that were provided to them by the NMFS. Methods used to collect and analyze the qualitative data and analyze the PSC ownership data are discussed next.

Qualitative interview data collection and analysis: The CL report indicates that it “received input from about 50 individuals [interviewees]” in total. These individuals include managers of six groundfish sectors, fishing vessel captains, industry representatives and other individuals connected to the fishery (see page 4-5 of the CL report). CL also solicited information “through survey forms and a public webinar that was hosted by NEFMC.” An invitation to participate in the webinar was posted on the NEFMC website and an email invitation was sent to 800 individuals. This latter report produced “about a dozen survey responses.” Given a respondent pool in excess of 800, the response rate to the survey was less than 1.5%.

The CL report states that CL personnel “reviewed transcripts and summaries of public meetings including scoping hearings on Amendment 18, NMFS reports on the fishery and annual reports prepared by sectors and state-operated permit banks.”

It should be emphasized that the CL report states only that interviews were conducted. It does not indicate whether a formal sampling procedure was followed. The report does not report the survey questions that were asked of interviewees nor does CL report the actual responses or provide transcripts of interviews that were conducted.

PSC ownership analysis: The CL report indicates CL personnel received and reviewed “data covering landings, catch and allowable catch for species and stock area by permit from fishing seasons 2010 through 2012, along with groupings of permits based on ownership information.” The CL report states that CL personnel “also examined ex-

vessel prices, and data on quantities of imported” fish and fish products available from the NMFS website” and obtained data “from NOAA on fishery product imports and exports (page 6).”

CL calculate and report HHI indices and the number of entities owning PSC at various levels of aggregation, e.g., across individual species, and at the sector level.

2.2 Strengths and weaknesses of the Compass Lexicon proposal

Strengths: The main strength of the CL methodology is simplicity and ease of implementation. HHI indices are easily calculated using spreadsheet software. The HHI can be understood by people who have a modest mathematical background. Implementing an ownership cap policy based on a 15.5% share cap by species would likely present a relatively small administrative burden for regulatory agencies responsible for implementing the policy.

Weaknesses: The CL conclusion and ownership cap recommendation has several weaknesses. Overall, the methods used by CL to obtain their results do not meet standards for research in the social sciences.

The conclusion and recommendation appear to be based on casual observation of a very small and likely unrepresentative sample of industry stakeholders, and incorrect use of HHI indices. No theoretical justification is offered in support of the methods used.

2.3 Evaluation of Compass Lexicon methodology

2.3.1 Using qualitative information to find evidence of market power

The CL methodology relies heavily on unstructured qualitative information about current conditions and potential for market power in the NEMS fishery. Methods used to collect the qualitative information do not meet standards for conducting social science research. For example, CL claims that 50 interviews were conducted and that results from these interviews support particular conclusions regarding current market power. The report does not list questions that were posed or answers received. Importantly, the CL methodology does not explicitly link interviewer responses (because none are reported) to the specific conclusions that they make in their analysis.

There are well established and accepted techniques that can be used to gather information through surveys and personal interviews. There are also numerous complications that can bias information gathered (see Tourangeau, Rips and Rasinski, 2000).

It is apparent that CL interviewed a non-random sample of individuals who agreed to speak with CL. The method of eliciting voluntary feedback may be necessary for collecting qualitative information. The small sample size raises questions about the

representativeness of the feedback that was gathered by CL. Moreover, CL personnel then summarized the unstructured feedback using a procedure that is not documented in their report. It is conceivable that their effort to collect qualitative information produces subjective opinions of a small and non-representative sample of stakeholders. Furthermore since conclusions from the qualitative data require subjective interpretation by CL personnel, the entire qualitative data collection effort and analysis should be interpreted cautiously. There is no way to verify or refute findings based on qualitative data.

The CL report states that additional data sources, e.g., transcripts and summaries of public meetings, including scoping hearings on Amendment 18, NMFS reports on the fishery and annual reports prepared by sectors and state-operated permit banks, were consulted. However, there is no discussion of the contents of this additional material in the CL report.

In the summary of findings obtained in the interview process CL states, “stakeholders also provided highly similar descriptions across different sources for several of the key factual matters for our analysis, including: a) the methods used for trading ACE, b) whether there have been observed instances of withholding of ACE or fishing effort in order to raise prices, c) how much variation in the fishery performance occurs across seasons, d) who effectively controls ACE within the sectors, and e) how well (or poorly) participants are able to predict which stocks will be in short supply during a fishing year.” (page 5). CL report authors state “our data analysis conformed with the qualitative information we received from stakeholders...” (page 5). This is again a subjective interpretation that is difficult to verify or refute.

The standard for conducting scientific research is that the study methods be described in sufficient detail to allow an independent researcher to replicate and verify the results. The CL report is not a scientific research study. However, it should provide enough detail for the reader to understand the basis on which each conclusion is drawn. This was not done.

2.3.2 Interpretation of HHI indices for making inference on market power

The conclusion and recommendation of the CL report appears to rely almost entirely on the premise that HHI's below 1,500 are sufficient for a competitive market outcome and are therefore safe. The CL report miss-interprets the implications of the HHI index and the role of threshold values reported in the US Department of Justice Horizontal Merge Guidelines. The guidelines suggest that HHI values below 1,500 are consistent with an industry that is not concentrated, that values between 1,500-2,500 are consistent with an industry that is moderately concentrated, and values exceeding 2,500 are consistent with an industry that is highly concentrated. The HHI measures concentration. It is a tool that is used to identify mergers that could ultimately result in non-competitive market outcomes. Page 19 of the guideline states:

The purpose of these thresholds is not to provide a rigid screen to separate

competitively benign mergers from anticompetitive ones, although high levels of concentration do raise concerns. Rather, they provide one way to identify some mergers unlikely to raise competitive concerns and some others for which it is particularly important to examine whether other competitive factors conform, reinforce, or counteract the potentially harmful effects of increased concentration. The higher the post-merger HHI and the increase in the HHI, the greater are the Agencies potential competitive concerns and the greater is the likelihood that the Agencies will request additional information to conduct their analysis.

As suggested in the above, the HHI index is neither necessary nor sufficient for anti-competitive behavior in a market. It is an easily calculated index that serves as an early warning system. It can signal the need for further investigation to determine if a merger will, in fact, result in anti-competitive behavior.

This is important because the CL recommendation of a 15.5% ownership cap on PSC ownership is derived from the HHI threshold value of 1,500, i.e., the lower bound value for a moderately concentrated industry. Page 44 of the CL report explains that, “When there is no competitive fringe, a cap of about 15.5 percent would be required to prevent the HHI from exceeding 1,500.” There is no theoretical basis and no compelling argument provided in the CL report to support this rule. More importantly, there is no theoretical foundation or compelling argument offered by the CL report to indicate that this particular threshold of 15.5% is capable of preventing market power in a multiple-species fishery that is managed with a system of sectors, PSC, ACE, etc.

In sum, the methods used by the CL report for determining whether market power exists currently, and for the recommendation of a 15.5% ownership cap are not defensible.

2.3.3 Unit of regulation

CL recommends “setting an excessive share cap on the PSC conferred to permit owner at 15.5 % of available PSC.” The unit of regulation is taken to be an individual entity. A unique feature of the NE ground fish fishery is that it is managed with a system of sectors, wherein multiple PSC owners participate in a form of a coop. Sector members may share resources and perhaps work collectively to achieve common goals. They employ a sector manager whose function includes, among other services, coordination of PSC and ACE trades within and across sections (Labaree, 2012).¹ The fishery also includes organizations referred to as *permit banks*, whose purpose was described as one

¹ Labaree, 2012 reports, “The sector manager's job varies from sector to sector, but has three basic components: tracking and reporting the sector's landings, discards, and trades on a weekly basis; keeping track of the internal division or allocation and catch; and overseeing the trade of allocation with other sectors. Some managers take on additional duties, such as overseeing the sector's finances. Some sectors have subcontracted the tracking and reporting task to a third party. In all cases, the sector manager is hired by and reports to the sector's board of directors.”

of controlling PSC so that it can encourage harvesting by particular groups of fishermen, e.g., fishermen from a particular state or fishermen who are new to the industry. Market power stems from the perception or realization of an economic agent that their production decisions in either the output or the factor input market are significant enough to have an influence on equilibrium prices. Sectors appear to have the means to control large quantities of PSC and ACE. Under the CL recommendation of a 15.5% cap at the individual level, it would be easy for a single sector's participants to own 100% of PSC and ACE.

The CL report does discuss (page 29) the possibility of sectors exercising market power. However, the report dismisses the possibility based on feedback obtained in the unstructured interview process. The report states "However, discussions with sector managers and others indicate, without exception, that sectors do *not*, in fact, operate to maximize the joint value of ACE allocated to the sector." The CL report offers additional arguments to support this claim. However, CL's conclusion that sectors do not and will not exercise market power is based on interviewee feedback. It seems highly unlikely that evidence of participation in criminal activity will be revealed through voluntary interviews. Furthermore, the behavior of sectors currently is not a perfect predictor of future behavior. For example, Labaree (2012) states, "Finally, sector members may find benefit from planning their activities around their sector's total allocation rather than treating each member's allocation as an individual quota." In contrast to the CL interpretation of sector function, other researchers have explicitly noted the potential for sectors to operate in a way that maximizes the collective profits of its members. Finally, current laws allow sectors to undergo various bargaining and marketing activities with the goal of increasing member profits (see Sullivan et al., 2012 for a complete discussion of sector relevant antitrust law).

The above paragraph should not be interpreted as a suggestion that sectors are currently or will in the future exercise market power. The point being made is that the CL report does not provide sufficient evidence to dismiss the possibility that market power does or could exist at the sector and permit bank level.

2.3.4 Economies of scale, size and scope

The historical development of the NEMS fishery has followed a path seen in many other fisheries. Commercial fishing typically begins under open access regulation. Input control regulation was then adopted, followed by the current system of output control or quota-based management. Input control regulation in the NE ground fish fishery took the form of constraints on the number of days that vessels can be at sea, restrictions on the type of gear that can be used, closed areas, and limits on the quantity of fish that can be caught on each fishing trip. These regulations effectively limit the quantity of fish that can be harvested by a vessel during each fishing season. The regulations result in dis-economies of size, i.e., the average cost per unit of harvest would fall if a vessel operator could increase his/her seasonal harvest quantity. There is published evidence (although somewhat dated) that suggests input control regulations have led to a build-up of fleet

harvesting capacity that exceeds current aggregate harvest limits (Waldon and Kirkley, 2000).

Economic theory and empirical evidence con form that rights-based management approaches provide incentives to re-align fleet harvesting capacity with aggregate harvests (e.g., Grafton et al., 2000; Matulich, et al., 1996; Singh et al., 2006). The fleet rationalization process (shedding of excess vessel, and in some cases, processing capacity) can be delayed (Weninger, 1996, 1998). What is not clear is the extent to which the fleet rationalization process has played out in the NEMS fishery since output control management began in 2010.

Testimony from a sector representative, Maggie Raymond, during the June 12, 2014 public comment period suggested that industry members have been in a PSC consolidation *holding pattern* due to the uncertainty surrounding the pending ownership cap regulation that is currently being crafted by the NEFMC. If this characterization is accurate, it is possible (likely) that additional and substantial fleet rationalization and concentration of PSC ownership will occur in the NEMS fishery (depending, of course, on the particular ownership cap regulation that is adopted). It is reasonable to suspect that the motive for further rationalization is exploitation of unrealized economies of size, scale and scope. Because an ownership cap policy would prevent the realization of such economies, it is important to determine the extent to which scale, size and scope economies currently exist.

The CL report claims that there is a “lack of evidence for scale economies continuing to occur for individual owners above 10 to 12 percent of a stocks ACE...” CL personnel further suggest that the adoption of a 15.5% ownership cap will not interfere with the industries' ability to exploit economies of scale. CL personnel have apparently made this determination based on discussions with interviewees. This is not a valid method for testing for and measuring economies of scale, size or scope. Further, the statement on page 42 which states, “The existence of some larger fleets indicate there are opportunities for economies of scale within the Northeast Multi-species Fishery or at least that efficiency concerns do not preclude larger fleets”, is not informative about current or potential scale economies in the NEMS fishery.

Accepted econometric-based methods can and should be used to test for and measure scale economies (e.g., Weninger, 1998). CL does not employ these methods and therefore has no basis for claiming that a 15.5% ownership cap will not impede such economies from being realized.

2.3.5 Theoretical and empirical basis for setting ownership caps in quota-managed fisheries

Anderson (1991, 2008) and Anderson and Holliday (2007) offer a theoretical foundation to establish ownership caps in quota-managed fisheries. While there are differences between the setting studied by Anderson and the NEMS fishery, his work offers

theoretical context for assessing market power in quota-managed industries. As correctly noted in the CL report, market power may arise in the consumer or ex-vessel market for fish and/or in the market for harvesting permits. An agent who attempts to exert market power does so with the goal of increasing his/her private profits. There are conditions which must hold in a quota-constrained market for such price manipulation to be profitable. In particular, it may be possible to raise ex-vessel prices by holding back fishing permits from the permit market thus reducing industry-wide harvest. This strategy can raise private profit for the agent only if the demand for fish is sufficiently inelastic (see Anderson, 2008). The CL report attempts to infer this elasticity by discussing the relevant markets for NE ground fish. CL does not measure demand elasticities, nor do they consult existing literature that sheds light on the magnitude of ground fish demand elasticities (see for example Lee and Thunberg, 2013). The approach used by CL - to base inferences about demand elasticity from qualitative data obtained in unstructured interviews - does not meet standards for scientific research.

The theoretical foundation for manipulating markets for harvesting permits, either PSC or ACE, in multiple-product is complicated.² The statement in the CL report on page 35 that "There is no entity operating in the fishery that would be at all likely to succeed at successfully raising the price of ACE by withholding it from others in the fishery" is not supported with evidence.

As stated earlier, market power inefficiencies can arise when economic agents' production decisions impact equilibrium market prices. The inefficiency arises because agents forego trades that are otherwise welfare improving, in order to maintain favorable prices and increase private profits. In the context of the NEMS fishery, an agent may choose to trade less or more PSC or ACE to manipulate trading prices in their favor. It is important to realize that if aggregate harvest quotas bind, one agent's purchase (sale) of a harvesting permit necessarily implies a reduction (increase) in permits held by some other agent or agents. In this setting, it is hard to imagine a case where prices are not affected by the redistribution of PSC and ACE among industry members. Permit trading and price changes do not by any means imply inefficiency. In a multiple-product, quota-managed industry, efficiency is characterized by an equal marginal principle; harvesting is cost efficient if the distribution of permits across active and non-active fishermen (potential entrants) is such that the marginal cost of harvesting an additional unit of fish is equal across all permit holders and across all species. Determining if this condition is met requires detailed information about the structure of the multi-species harvesting cost technology. CL does not have this information, and therefore has no basis to make claims one way or the other regarding market power in the PSC or ACE market.

² I am unaware of any literature that outlines the conditions for exercising market power in multi-product quota-managed industries.

2.3.6 “Choke species” in multiple-species fisheries: implications for market power

The CL report (executive summary) states: “The need to have ACE for each species caught and the likely need for some fishermen to have to buy ACE to cover the fish they will actually harvest presents additional opportunities for large holders of ACE to exercise market power in the markets for ACE. In particular, imbalances between ACE holdings and availability of species sometimes create a situation in which a species has a low catch limit and may not be itself commercially viable for harvest, but cannot be avoided by fishermen harvesting other species (what some in the fishery call “choke stocks”). A large holder of ACE for a choke stock could potentially engage in the exercise of market power in either the output market for fish or in the markets for ACE trading.”

This statement is overly simplistic and has potential to mischaracterize fishing behavior and market outcomes in a multi-species fishery.³ First, no formal definition of a “choke stock” is provided. In a multiple-species fishery, the marginal profit from harvesting one more unit of a particular species stock, given the array of other species being harvested, can be high. The equilibrium quota price for this species will be equal to the marginal profit and therefore the quota price will be high.

Under weak output disposability technologies, the cost of harvesting a particular mix of species can actually fall if the quantity of some species in the mix is increased. The reason this occurs can be understood with a simple example. Consider a fishery that harvests two species, A and B. Suppose the two species stocks are roughly equal in size or abundance within the geographic boundary of the fishery. Suppose also that species A and B fish co-habitat in the marine environment and are both susceptible to the fisherman's gear. The fisherman can affect the mix of species caught by adjusting fishing practices (e.g., fishing at different locations and times of the day or year, using different baits or gear). Finally, suppose the fishery manager sets equal aggregate catch limits for species A and B.

Next, consider a fisherman who has allocated equal amounts of PSC for the two species. Following the NEMS fishery regulatory structure, the fisherman will also hold equal amounts of ACE. Harvesting the ACE will likely require few, if any, *targeting* efforts or activities. The fisherman can drag his net through the water anywhere within the fishing grounds whenever he chooses and, on average across the fishing season, catch a mix of species that matches his ACE holdings.

Suppose the next season the manager decides to reduce the aggregate catch limit for species A dramatically, say by 75%. Nothing else changes from the example above. In this scenario, the fisherman's ACE holding no longer matches the mix of stocks

³ Boyce (1996), Singh and Weninger (2009) characterize harvesting/targeting behavior and quota price determination in multiple-species, quota-managed fisheries under joint-in-inputs and weak-output-disposability harvest technologies

intercepted by his gear, unless costly steps are taken to avoid species A and/or *target* species B. In order to harvest a mix that matches ACE holdings, which are now 1 unit of species A for each three units of species B, the fisherman may have to fish only in certain locations and/or at certain times of the day or year. He may have to pull his net from the water more often to make sure he is not catching too much species A fish. He may have to move to a new location often to obtain the 1:3 mix of species A to B that is required by the regulation. Because *avoiding* species A is costly, the fisherman will likely want to buy more of the species A ACE. Doing so allows him to undertake fewer costly avoidance measures, and this cost saving will be reflected in the trading price for ACE. Alternatively, if avoiding species A is too costly given harvests of the other species, ex-vessel prices for species A and B and the stock conditions in the fishery, a profit maximizing fisherman may choose to leave some of his species B ACE unfished (this may describe the current situation in the NEMS fishery).

Several important insights emerge from the example above. First, the mix of species harvested by the fisherman is an endogenous choice that is determined by technology, market prices and ecological conditions. The marginal profit associated with a particular species, and thus the equilibrium permit price, depends on the full array of prices, stocks and cost complementarities embedded in the harvesting technology. Third, fishermen will have a derived demand for PSC and ACE that depends on all prices, total allowable catches, stock conditions and technological constraints. Most importantly, the conditions under which an agent can exercise market power in PSC and ACE markets are not well understood.

There is no theoretical or empirical basis for the assertions made by CL regarding market power in the ACE market. There is no basis for focusing only on low catch limit species in an investigation of market power. Use of the term “choke stocks” should be avoided unless a formal definition of the term is provided, and unless a complete and rigorous characterization of its role in multiple-species quota-managed fisheries is provided.

2.4 Data requirements

The CL recommendation of imposing a 15.5% ownership catch limit requires that a record be kept on ownership of PSC. It is my understanding that this is currently done by the NMFS, and therefore no additional data would be required if the CL recommendation is adopted.

2.5 Recommendations for further improvement

The CL conclusions regarding market power currently in the NE ground fish fishery, and the recommendation of a 15.5% ownership cap appears to be based on a subjective interpretation of a small and likely non-representative sample of feedback from industry stakeholders (i.e., opinions and anecdotes). The report would be improved if an analysis

of market power in the NEMS fishery were based on accepted methods from the field of economics.

3 Conclusions and recommendations

The methods used by CL to obtain conclusions regarding market power in the New England ground fish fishery do not meet standards of economic research. Designing an ownership cap policy in the Northeast multiple-species fishery based on the CL conclusion and recommendation is not advised. National Standard 2 of the Magnuson-Stevens Fisheries Management and Conservation Act which requires, "Conservation and management measures shall be based upon the best scientific information available."

4 Appendices

4.1 Bibliography

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4.2 Background material provided for the review

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4.3 Statement of Work

External Independent Peer Review by the Center for Independent Experts

Evaluation of the study:

“Recommendations for Excessive Share Limits in the Northeast Multispecies Fishery”

Scope of Work and CIE Process: The National Marine Fisheries Service’s (NMFS) Office of Science and Technology coordinates and manages a contract providing external expertise through the Center for Independent Experts (CIE) to conduct independent peer reviews of NMFS scientific projects. The Statement of Work (SoW) described herein was established by the NMFS Project Contact and Contracting Officer’s Representative (COR), and reviewed by CIE for compliance with their policy for providing independent expertise that can provide impartial and independent peer review without conflicts of interest. CIE reviewers are selected by the CIE Steering Committee and CIE Coordination Team to conduct the independent peer review of NMFS science in compliance with the predetermined Terms of Reference (ToRs) of the peer review. Each CIE reviewer is contracted to deliver an independent peer review report to be approved by the CIE Steering Committee, and the report is to be formatted with content requirements as specified in **Annex 1**. This SoW describes the work tasks and deliverables of the CIE reviewer for conducting an independent peer review of the following NMFS project. Further information on the CIE process can be obtained from www.ciereviews.org.

Project Description: The New England Fishery Management Council (NEFMC) has been developing Amendment 18 to the Northeast Multispecies Fishery Management Plan, and as part of the Amendment, has been attempting to define an "excessive share" threshold for the fishery. All federal fishery management plans must comply with National Standard 4 of the Magnuson Act (16 U.S.C. 1851(a)(4)), requiring that fishing privilege allocations be carried out so that "no particular individual, corporation, or other entity acquires an excessive share of such privileges." During the course of the Council’s deliberations, it was decided that additional expertise from an external contractor was needed to help determine if excessive shares exist in the fishery today and describe potential constraints that could prevent excessive shares from existing in the future. In order to provide this expertise, the economic consulting firm Compass Lexecon was contracted to give advice on an appropriate excessive share threshold for the Northeast Multispecies Fishery.

Compass Lexecon defined an “excessive share” as a share of access privileges and/or quota leasing that would allow an entity to influence the prices of fishery outputs to its advantage, or to have market power. The research involved receiving input from fishery stakeholders via surveys and interviews and analyzed NMFS fishery data. Compass

Lexecon assessed available models for evaluating the presence of market power, and made recommendations with regard to their appropriateness for setting excessive catch share limits.

The work performed could be controversial. Examination of market power has never been formally investigated in this fishery. It recommended methods for determining excessive shares which might be applied in other fisheries. With the increased prevalence of catch share management systems, determining what constitutes an excessive share and whether limits need to be put in place is extremely important, because excessive shares may lead to market power. Market power can lead to the ability to influence price in either the final product market or in factors of production (i.e. the fish resource). Thus, the study by the Compass Lexecon was innovative and significant.

Compass Lexecon delivered its final report to the NEFMC on December 31, 2013, and a peer review (by the CIE) needs to take place to either endorse or reject their findings. Because Compass Lexecon was contracted by the NEFMC, the Northeast Fisheries Science Center (NEFSC) agreed to coordinate the review of the report on behalf of the NEFMC. The NEFSC has asked the CIE to formally conduct a review of the report.

The Terms of Reference (ToRs) of the peer review are attached in **Annex 2**. The tentative agenda of the panel review meeting is attached in **Annex 3**.

Requirements for CIE Reviewers: Three CIE reviewers shall conduct an impartial and independent peer review in accordance with the SoW and ToRs herein. CIE reviewers shall have working knowledge and recent experience in the application of economics, with specific expertise in industrial organization. The reviewers should have theoretical and empirical expertise in the economics of market structure/conduct/performance, particularly monopoly/oligopsony, antitrust, firm strategy, and government regulation. Experience conducting studies using econometric models and/or index-based assessments of market concentration and market power would be useful. Experience with markets operating under government permits such as production permit or marketing orders in agriculture, bandwidth for TV and radio, and tradable permit systems would be desirable. Empirical studies of market structure in renewable resource industries would be desirable as would an understanding of the statutory context for antitrust regulation. Each CIE reviewer's duties shall not exceed a maximum of 16 days to complete all work tasks of the peer review described herein.

Not covered by the CIE, the CIE chair's duties should not exceed a maximum of 16 days (i.e., several days prior to the meeting for document review; the CIE panel meeting; several days following the panel meeting for Summary Report preparation).

Location of Peer Review: Each CIE reviewer shall conduct an independent peer review during the panel review meeting. A meeting room has been reserved at the Hawthorne

Hotel, 18 Washington Square West, Salem, Massachusetts 01970 on June 12 and 13, 2014.

Statement of Tasks: Each CIE reviewer shall complete the following tasks in accordance with the SoW and Schedule of Milestones and Deliverables herein.

1. Prior to the Peer Review Meeting:

Upon completion of the CIE reviewer selection by the CIE Steering Committee, the CIE shall provide the CIE reviewer information (full name, title, affiliation, country, address, email, FAX) to the COTR, who forwards this information to the NMFS Project Contact no later the date specified in the Schedule of Milestones and Deliverables. The CIE is responsible for providing the SoW and ToRs to the CIE reviewers. The NMFS Project Contact is responsible for providing the CIE reviewers with the background documents, reports, foreign national security clearance, and other information concerning pertinent meeting arrangements. The NMFS Project Contact is also responsible for providing the Chair (see below) a copy of the SoW, background documents and final report in advance of the panel review meeting. Any changes to the SoW or ToRs must be made through the COTR prior to the commencement of the peer review.

Foreign National Security Clearance: When CIE reviewers participate during a panel review meeting at a government facility, the NMFS Project Contact is responsible for obtaining the Foreign National Security Clearance approval for CIE reviewers who are non-US citizens. For this reason, the CIE reviewers shall provide requested information (e.g., first and last name, contact information, gender, birth date, passport number, country of passport, travel dates, country of citizenship, country of current residence, home country, and FAX number) to the NMFS Project Contact for the purpose of their security clearance, and this information shall be submitted at least 30 days before the peer review in accordance with the NOAA Deemed Export Technology Control Program NAO 207-12 regulations available at the Deemed Exports NAO website: <http://deemedexports.noaa.gov/sponsor.html>.

Pre-review Background Documents: Approximately two weeks before the peer review, the NMFS Project Contact will send (by electronic mail or make available at an FTP site) to the CIE reviewers the necessary background information and reports for the peer review. In the case where the documents need to be mailed, the NMFS Project Contact will consult with the CIE Lead Coordinator on where to send documents. CIE reviewers are responsible only for the pre-review documents that are delivered to the reviewer in accordance to the SoW scheduled deadlines specified herein. The CIE reviewers shall read all documents in preparation for the peer review.

2. During the Panel Meeting

Panel Review Meeting: Each CIE reviewer shall conduct the independent peer review in accordance with the SoW and ToRs, and shall not serve in any other role unless specified herein. **Modifications to the SoW and ToRs can not be made during the peer review, and any SoW or ToRs modifications prior to the peer review shall be approved by the COR and CIE Lead Coordinator.** Each CIE reviewer shall actively participate in a professional and respectful manner as a member of the meeting review panel, and their peer review tasks shall be focused on the ToRs as specified herein. The NMFS Project Contact is responsible for any facility arrangements (e.g., conference room for panel review meetings or teleconference arrangements). The NMFS Project Contact is responsible for ensuring that the Chair understands the contractual role of the CIE reviewers as specified herein. The CIE Lead Coordinator can contact the Project Contact to confirm any peer review arrangements, including the meeting facility arrangements.

(Review Meeting Chair)

A member of the New England Fishery Management Council's Scientific and Statistical Committee will serve as Chairperson. The role of the Chair is to facilitate the meeting, which includes coordination of presentations and discussions, and making sure all Terms of Reference are reviewed. Additionally, the Chair shall prepare the summary report from the meeting. During the meeting, the Chair can ask questions or make statements to clarify discussions, and he can move the discussion along to ensure that the CIE reviewers address all of the TORs.

(CIE Reviewers)

Each CIE reviewer shall participate as a peer reviewer in a panel discussion centered on a report furnished to the NEFMC by Compass Lexecon regarding excessive shares in the Northeast Multispecies Fishery. Reviewers are to determine whether the findings of the Technical Group are valid given the Terms of Reference provided to the expert panel. If reviewers consider the recommendations of the expert panel to be inappropriate, the reviewers should recommend an alternative.

(Compass Lexecon)

A representative from Compass Lexecon shall provide a presentation of their final report. During the question and answer period, the Compass Lexecon representative will be available to answer questions about the report. The CIE members can provide feedback to Compass Lexecon at that time.

(Other Panel Members)

A staff representative from the NEFMC and from the NEFSC Social Sciences Branch will be available during the meeting to provide any additional information requested by

the CIE reviewers. These other panel members may assist the Chair in preparing the summary report, if requested.

(Public)

Day 1 of the panel meeting will be open to the public to attend as observers. The agenda will allow for limited public comment.

3. After the Open Meeting

Contract Deliverables - Independent CIE Peer Review Reports: Each CIE reviewer shall complete an independent peer review report in accordance with the SoW. Each CIE reviewer shall complete the independent peer review according to required format and content as described in Annex 1. Each CIE reviewer shall complete the independent peer review addressing each ToR as described in Annex 2.

Other Tasks – Contribution to Summary Report: The Chair from the SSC and CIE reviewers will prepare the Peer Review Summary Report. Each CIE reviewer will discuss whether they hold similar views on each Term of Reference and whether their opinions can be summarized into a single conclusion for all or only for some of the Terms of Reference. For terms where a similar view can be reached, the Summary Report will contain a summary of such opinions. In cases where multiple and/or differing views exist on a given Term of Reference, the Report will note that there is no agreement and will specify - in a summary manner – what the different opinions are and the reason(s) for the difference in opinions.

The Chair's objective during this Summary Report development process will be to identify or facilitate the finding of an agreement rather than forcing the panel to reach an agreement. The Chair will take the lead in editing and completing this report. The Report (please see Annex 1 for information on contents) should address whether each Term of Reference was completed successfully. For each Term of Reference, this report should state why that Term of Reference was or was not completed successfully.

Specific Tasks for CIE Reviewers: The following chronological list of tasks shall be completed by each CIE reviewer in a timely manner as specified in the **Schedule of Milestones and Deliverables**.

- 1) Conduct necessary pre-review preparations, including the review of background material and reports provided by the NMFS Project Contact in advance of the peer review.
- 2) Participate during the panel review meeting in Salem, Massachusetts during June 12-13, 2014 as specified herein, and conduct an independent peer review in accordance with the ToRs (**Annex 2**).

- 3) No later than 27 June, 2014, each CIE reviewer shall submit an independent peer review report addressed to the “Center for Independent Experts”, and the report should be sent to Dr. Manoj Shrivani, CIE Lead Coordinator, via email to shivlanim@bellsouth.net, and Dr. David Sampson, CIE Regional Coordinator, via email to david.sampson@oregonstate.edu. Each CIE report shall be written using the format and content requirements specified in **Annex 1**, and address each ToR in **Annex 2**.

Schedule of Milestones and Deliverables: CIE shall complete the tasks and deliverables described in this SoW in accordance with the following schedule.

5 May 2014	CIE sends reviewer contact information to the ST Coordinator, who then sends this to the NMFS Project Contact
26 May 2014	NMFS Project Contact sends the CIE Reviewers the pre-review documents
12-13 June 2014	Each reviewer participates and conducts an independent peer review during the two-day panel review meeting
27 June 2014	CIE reviewers submit draft CIE independent peer review reports to the CIE Lead Coordinator and CIE Regional Coordinator
7 July 2014	Draft of Summary Report, reviewed by all CIE reviewers, due to panel Chair *
14 July 2014	Panel Chair send final Summary Report, approved by CIE reviewers, to NEFSC contact
14 July 2014	CIE submits CIE reports to the ST Coordinator
21 July 2014	The ST Coordinator distributes the final CIE reports to the NMFS Project Contact and regional Center Director

*The Summary report will not be submitted, reviewed, or approved by the CIE

Modifications to the Statement of Work: Requests to modify this SoW must be approved by the Contracting Officer at least 15 working days prior to making any permanent substitutions. The Contracting Officer will notify the COR within 10 working days after receipt of all required information of the decision on substitutions. The COR can approve changes to the milestone dates, list of pre-review documents, and ToRs within the SoW as long as the role and ability of the CIE reviewers to complete the deliverable in accordance with the SoW is not adversely impacted. The SoW and ToRs shall not be changed once the peer review has begun.

Acceptance of Deliverables: Upon review and acceptance of the CIE independent peer review reports by the CIE Lead Coordinator, Regional Coordinator, and Steering Committee, these reports shall be sent to the COR for final approval as contract

deliverables based on compliance with the SoW and ToRs. As specified in the Schedule of Milestones and Deliverables, the CIE shall send via e-mail the contract deliverables (CIE independent peer review reports) to the COR (William Michaels, via William.Michaels@noaa.gov).

Applicable Performance Standards: The contract is successfully completed when the COTR provides final approval of the contract deliverables. The acceptance of the contract deliverables shall be based on three performance standards:

- (1) each CIE report shall be completed with the format and content in accordance with **Annex 1**,
- (2) each CIE report shall address each ToR as specified in **Annex 2**,
- (3) the CIE reports shall be delivered in a timely manner as specified in the schedule of milestones and deliverables.

Distribution of Approved Deliverables: Upon acceptance by the COR, the CIE Lead Coordinator shall send via e-mail the final CIE reports in *.PDF format to the COR. The COR will distribute the CIE reports to the NMFS Project Contact and Center Director.

Support Personnel:

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William Michaels, Program Manager, COR
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Manoj Shivilani, CIE Lead Coordinator
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Key Personnel:

NMFS Project Contact:

Chad Demarest
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Chad.Demarest@noaa.gov Phone: 508-495-2355

NEFMC Staff Contact:

Rachel G. Feeney
New England Fishery Management Council
50 Water St., Newburyport, MA 01950
rfeeney@nefmc.org Phone: 978-465-0492 x110

Annex 1: Format and Contents of CIE Independent Peer Review Report

1. The CIE independent report shall be prefaced with an Executive Summary providing a concise summary of the findings and recommendations in accordance with the ToRs.
2. The main body of the reviewer report shall consist of a Background, Description of the Individual Reviewer's Role in the Review Activities, Summary of Findings for each ToR in which the weaknesses and strengths are described, and Conclusions and Recommendations in accordance with the ToRs.

- a. Reviewers should describe in their own words the review activities completed during the panel review meeting, including providing a brief summary of findings, of the science, conclusions, and recommendations.

- b. Reviewers should discuss their independent views on each ToR even if these were consistent with those of other panelists, and especially where there were divergent views.

- c. Reviewers should elaborate on any points raised in the Summary Report that they feel might require further clarification.

- d. Reviewers shall provide a critique of the NMFS review process, including suggestions for improvements of both process and products.

- e. The CIE independent report shall be a stand-alone document for others to understand the weaknesses and strengths of the science reviewed, regardless of whether or not they read the summary report. The CIE independent report shall be an independent peer review of each ToRs, and shall not simply repeat the contents of the summary report.

3. The reviewer report shall include the following appendices:

Appendix 1: Bibliography of materials provided for review

Appendix 2: A copy of the CIE Statement of Work

Appendix 3: Panel Membership or other pertinent information from the panel review meeting.

Annex 2: Terms of Reference for the Peer Review

Evaluation of the study: “Recommendations for Excessive-Share Limits in the Northeast Multispecies Fishery”

The peer review shall be conducted based on the following Terms of Reference (ToRs):

1. Describe the method or process used by Compass Lexecon for determining the maximum possible allowable percentage share of the market for fishery access privileges and/or quota leasing that would prevent an entity from obtaining an excessive share of access privileges allocated in the Northeast Multispecies Fishery.
2. Evaluate the strengths and weaknesses of the proposed method or process developed by Compass Lexecon (e.g., whether defining excessive shares in terms of market power is appropriate and adequate). Evaluate whether the approach outlined by Compass Lexecon is reasonable for setting excessive share limits in fisheries managed through catch shares in general. As part of this TOR, comment on any constraints that may hinder application of the proposed approach.
3. Evaluate application of the proposed methods or process to the Northeast Multispecies Fishery. Are Compass Lexecon’s conclusions regarding market power in both the final product (seafood) and production (quota) market valid and based on appropriate economic principles? If there is disagreement with what Compass Lexecon recommended, clearly state that and your reason why.
4. Review and comment on the data requirements necessary for applying the proposed methods or process.
5. Provide any recommendations for further improvement.

Annex 3: Tentative Agenda

Evaluation of the study: “Recommendations for Excessive-Share Limits in the Northeast Multispecies Fishery”

Location: Hawthorne Hotel, 18 Washington Square West, Salem, MA 01970

Date: June 12-13, 2014 (two day)

Day 1: Thursday June 12

- 9:00 Opening, Panel Chair (SSC representative)
- Welcome
 - Introduction
 - Agenda overview
 - Conduct of meeting
- 9:15 Background and Need for Compass Lexecon Report, NEFMC Staff (Rachel Feeney)
- 9:25 Background of Compass Lexecon Report and Introduction of Compass Lexecon, NMFS Project Contact (Chad Demarest)
- 9:35 Report of Compass Lexecon (Steve Peterson and/or Glenn Mitchell)
- 10:10 Break
- 10:25 Review of Terms of Reference – CIE Panel
- 10:45 Public Comment
- 11:00 CIE Panel Discussion – ToR #1
- 12:00 Lunch
- 1:00 CIE Panel Discussion – ToR #2
- 1:45 CIE Panel Discussion - ToR #3
- 3:00 Break
- 3:15 CIE Panel Discussion - ToR #4
- 3:45 CIE Panel Discussion – ToR #5
- 4:15 Public Comment
- 4:30 CIE Panel Discussion – Outstanding Issues
- 5:00 Adjourn

Day 2: Friday June 13

- 8:00 – 2:30 CIE Report Writing – (Only Panel Members, NEFMC and NEFSC staff are admitted)

4.4 Panel membership

Review Panel Chair

Dr. Eric Thunberg
NEFMC Science and Statistical Committee
NOAA HQ Office of Science and Technology

Review Panelists

Dr. Trond Bjorndal
SNF Centre for the Applied Research at NGG Bergen, Norway

Dr. Jamie Brown Kruse
Director, Center for Natural Hazards Research, East Carolina University
Greeneville, NC USA

Dr. Andrew Schmitz
Department of Food and Resource Economics
University of Florida
Gainesville, FL USA

Dr. Quinn Weninger
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Ames, Iowa USA